

ART METAL WORK  
AND JEWELRY  
BY LOUIS J. HAAS

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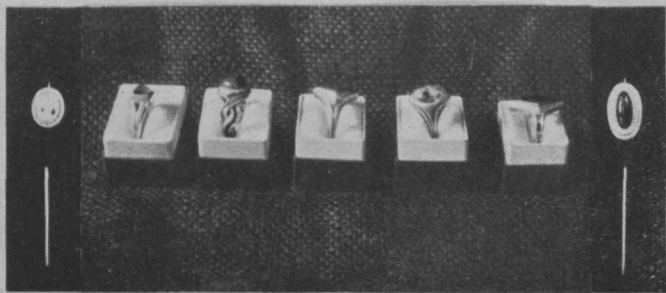
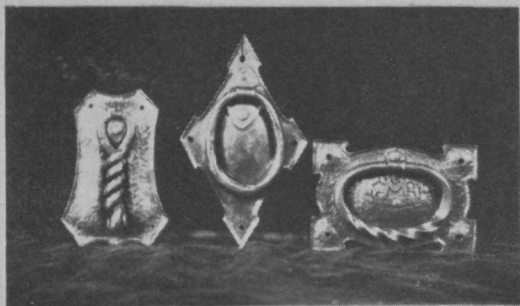
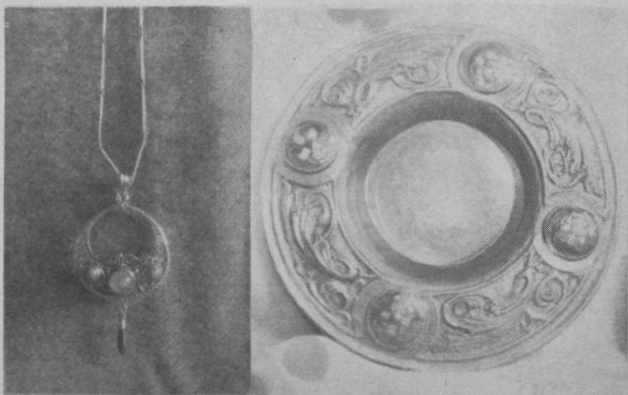
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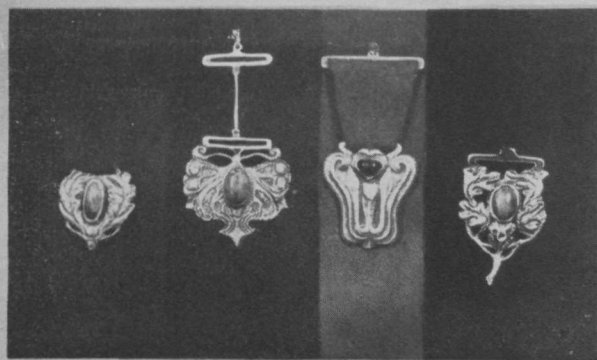
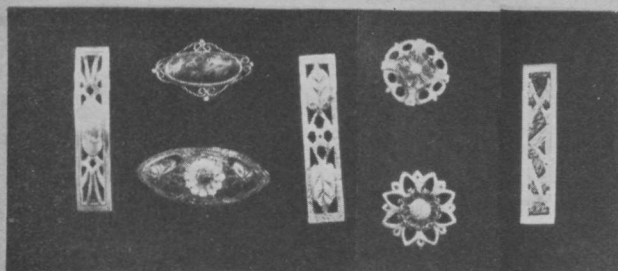
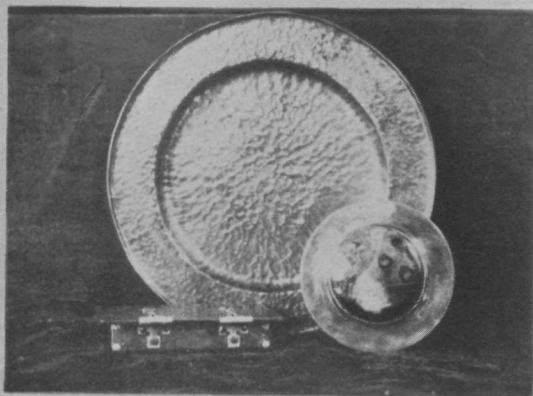


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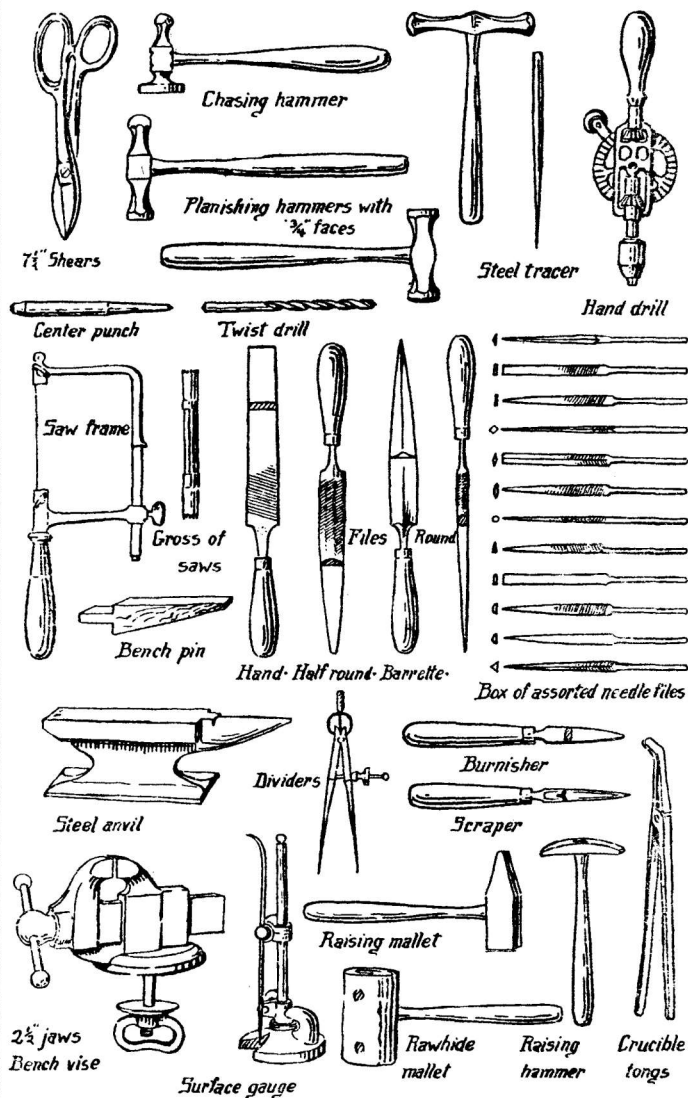
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# ART METAL WORK AND JEWELRY

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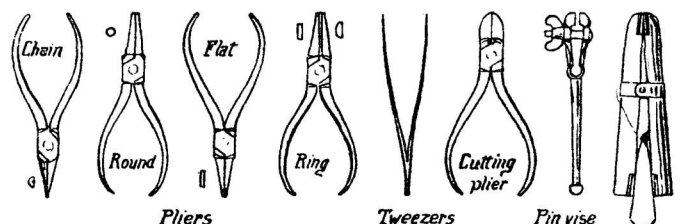
## Tools and Equipment Sheet #1



# ART METAL WORK AND JEWELRY

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## Tools and Equipment Sheet # 2



Pliers

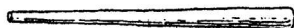
Tweezers

Pin vise

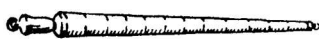
Ring clamp



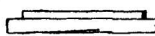
Jeweler's anvil



Ring mandrel



Ring gauge



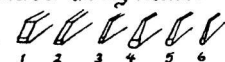
Oil stone



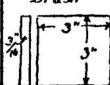
Tongs and draw plate



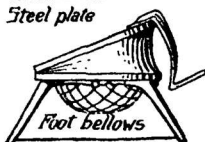
Gravers of following sections



Borax brush



Steel plate



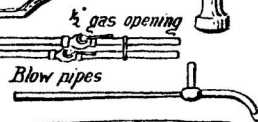
Foot bellows



Pitch pot and ring



Pickle pan



Blow pipes

Reamer



Wooden cement block loaded with lead



Hand vise



Stone jar



Wedgewood mortar



Charcoal block

Use tools only for the purposes for which they are intended. Keep hammer, stake and anvil faces free from dents and scratches and well polished with emery and crocus cloth. Oil all tools as often as needed to keep them free of rust.



Block lead

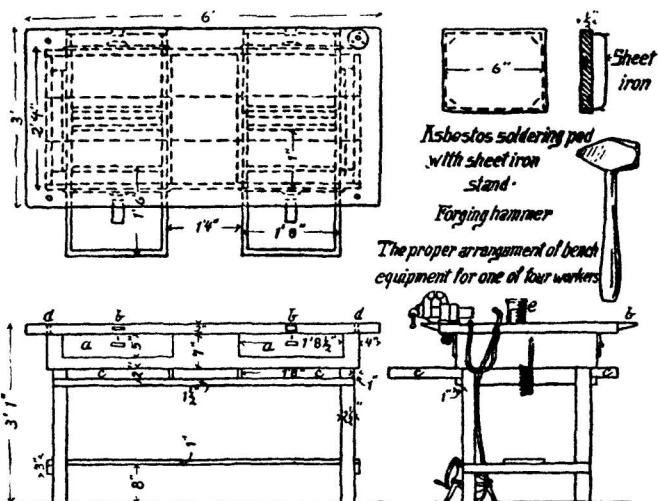


Dapping die and block

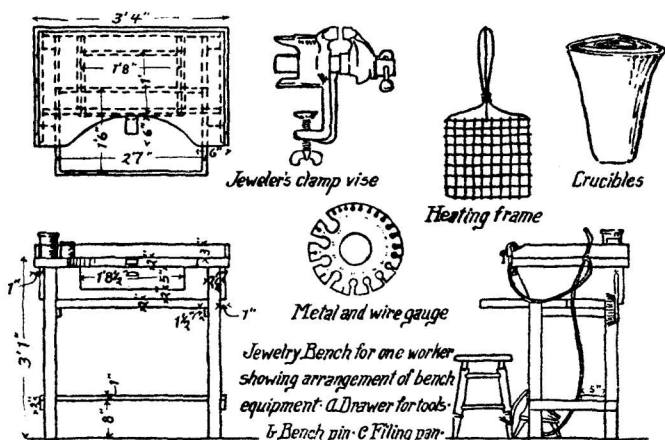
# ART METAL WORK AND JEWELRY

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Tools and Equipment Sheet # 3



Combination Art Metal Work and Jewelry Bench for four students. a Drawers for individual tools. b Bench pins. c Filing pans. d Positions for vises. e Pickle and water jars.

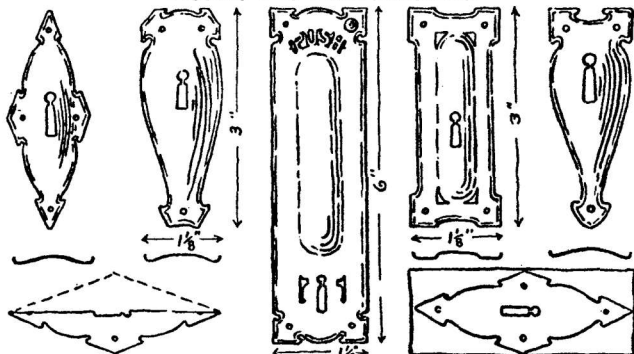


d Vise. e Pickle and water jars. Clean off top of bench every day sweeping into filing pan. Clean out pan once a week and save contents separately with the floor sweeps to be sent to refiners.

# ART METAL WORK AND JEWELRY

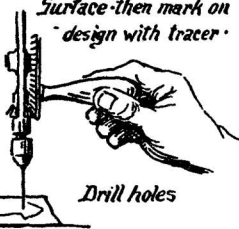
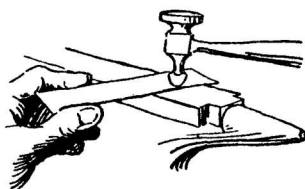
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## Problem #1 The Escutcheon



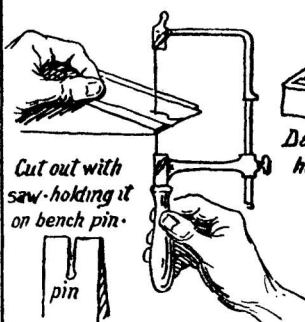
Fold paper, draw half and trim.

Surface then mark on design with tracer.



Drill holes

Surface evenly with a hammer, trace design, center punch holes.



Cut out with saw, holding it on bench pin.

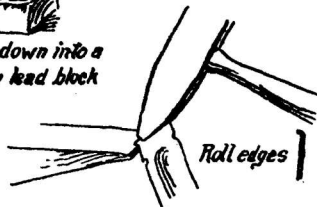


Scrape the edges



Burnish

Dap face down into a hollow in lead block



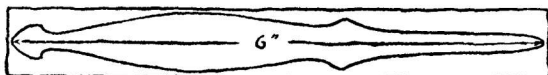
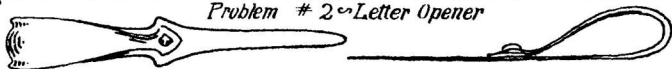
Roll edges

Material - 22 gauge copper. Equipment - shears, anvil, chasing or planishing hammer, steel tracer, center punch, drills, hand drill, #1 saws, saw frame, bench pin, files, scraper, burnisher, lead block, raising mallet. Note - planishing hammer marks should touch each other. Work across the metal in lines. Saw on lines, having teeth point down.

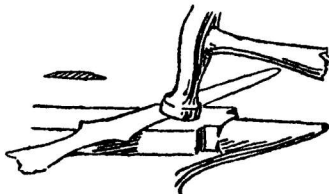
# ART METAL WORK AND JEWELRY

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### Problem # 2 Letter Opener



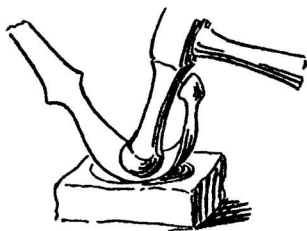
Planish metal on both sides, then trace on the pattern and cut out with the saw



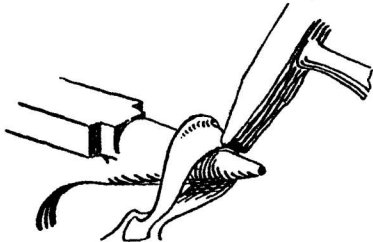
Forge blade to an edge with planishing hammer, file true and burnish



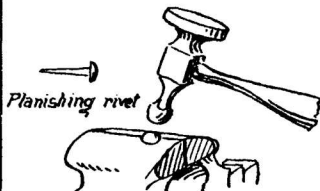
Place on lead block face up and shape handle into shape



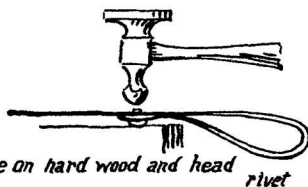
Shaping and bending handle on lead block.



Rolling up edges.



Planishing rivet



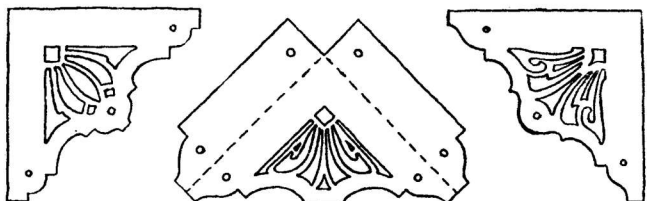
Place on hard wood and head rivet

Material—20 gauge unannealed planished copper, copper tack rivet.  
Equipment—shears, planishing hammer, anvil, tracer, center punch, drills, hand drill, #1 saws, saw frame, chasing hammer, lead block, raising hammer, bench vise, bench pin, wood block, file, scraper, burnisher, cutting pliers.

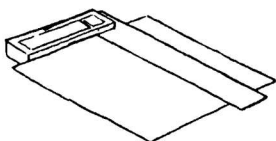
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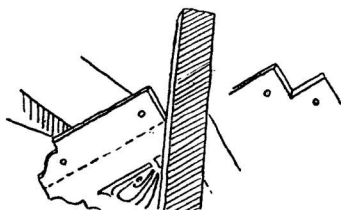
## Problem # 3 Box Corner



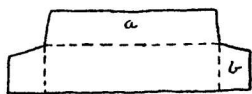
Surface·trace on design·center punch·drill·saw out·scrape·file and burnish·



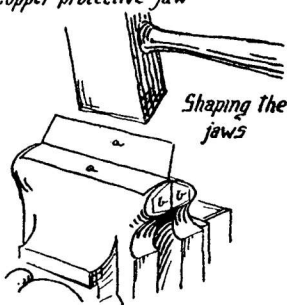
Lay out lines with a square



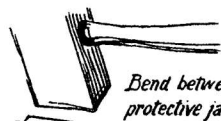
Miter edges of corner from back



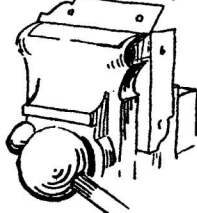
Copper protective jaw



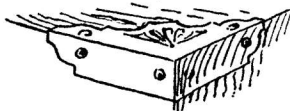
Shaping the jaws



Bend between protective jaws



Corner applied

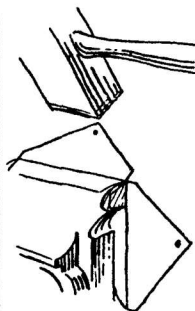
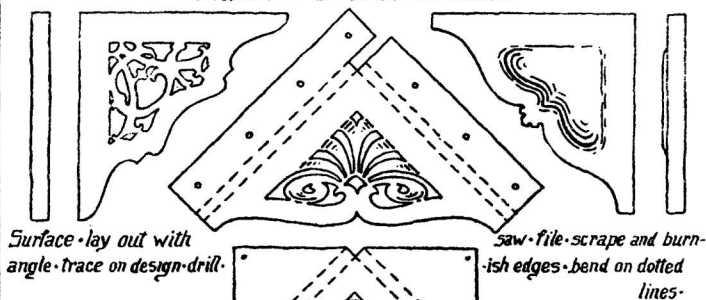


Material—22 gauge copper·copper tacks· Equipment—shears·planishing hammer·anvil·square·tracer·drills·hand drill·#1 saws·saw frame·bench pin·file·emery paper·scraper·burnisher·protective jaws·bench vise·raising mallet·  
Note—bold simple designs suggest like treatment in surfacing·

# ART METAL WORK AND JEWELRY

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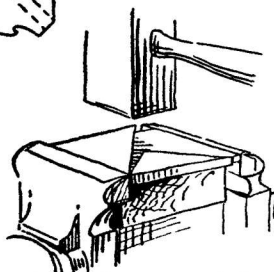
### Problem # 4 Desk Pad Corners



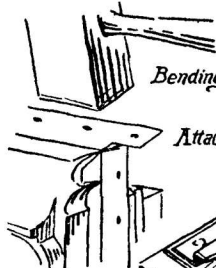
Bending 1st. angle



Slips over blotter and pad

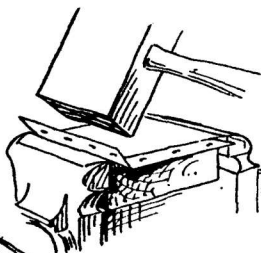


Bending 2nd. angle around steel plate supporting with block



Bending 1st. angle

Attach to pad back with rivets



Bending 2nd angle

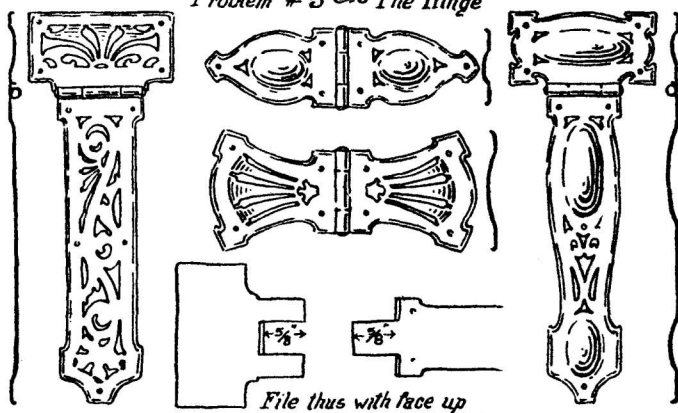
Material - 22 gauge copper - copper tack rivets. Equipment - shears - planishing hammer - square - tracer - center punch - drills - hand drill - #1 saws - saw frame - files - emery paper - scraper - burnisher - protective jaws - bench vise - steel plate - wood block - hickory mallet - cutting pliers - chasing hammer.

Note - taste can be exercised in selecting planishing hammer and resulting surface.

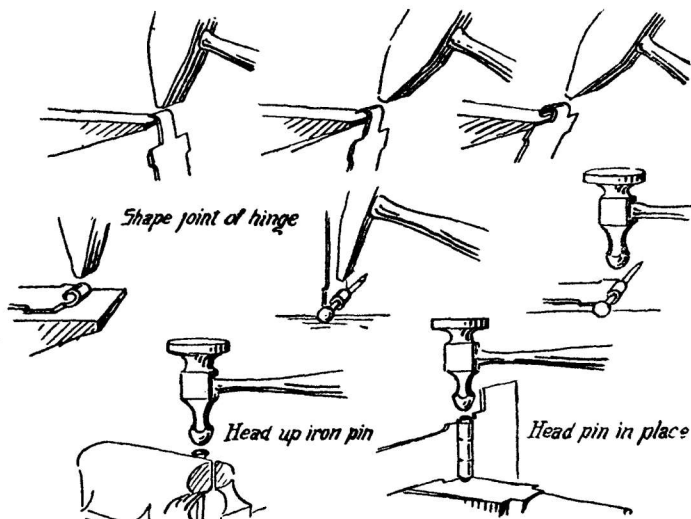
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## Problem # 5 The Hinge



Surface trace on design drill saw out dap up in lead roll edges and file.

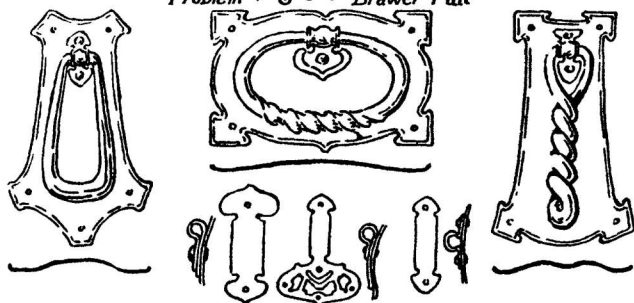


Material— #20 gauge copper • wire nail for pin • copper or brass screws • Equipment—shears • planishing hammer • anvil • tracer • center punch • drills • hand drill • #1 saws • saw frame • files • emery paper • scraper • burnisher • raising mallet • bench pin • raising hammer • chasing hammer • vise •

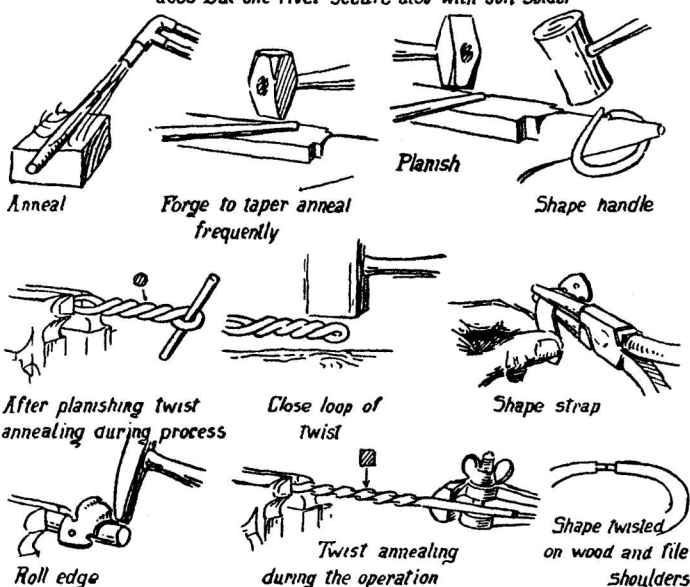
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## Problem # 6 Drawer Pull



Surface the plate-trace on design-drill-cut out with saw-file-emery-scrape and burnish-or hammer edges-then rivet strap with handle in place. If strap uses but one rivet secure also with soft solder.



Material — #20 gauge copper · copper tack rivets ·  $\frac{1}{4}$ " copper bar ·  
 Equipment — shears · planishing hammer · tracer · #1 saws · saw frame · center punch · drills · drill press · file · emery · scraper · burnisher · plier · forging hammer · rawhide mallet · hickory mallet · blowpipe · bellows · anvil · charcoal · bench vise · hand vise · chasing hammer · raising hammer · protective jaws · lead · steel bar ·

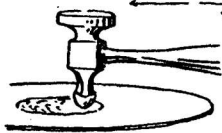
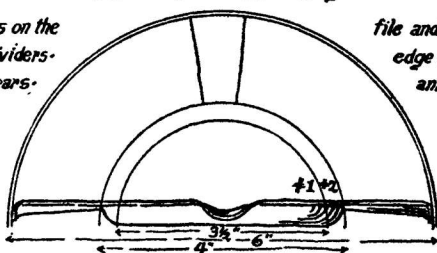
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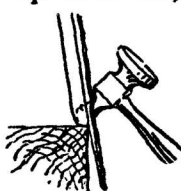
## Problem #7 Ash Tray

Scribe circles on the metal with dividers. trim with shears.

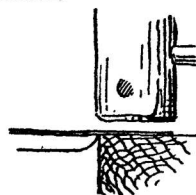
file and emery the edge smooth and anneal the disk.



Planish with heavy concentric blows

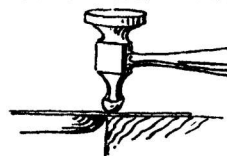


Carefully finish rise between circles #1 and #2

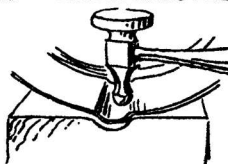


True the flange

Holding flat to table drive metal down until circle #1 is reached



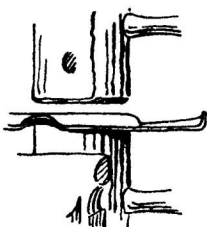
Planish the flange with lighter blows



Sink flute into groove in a block of wood



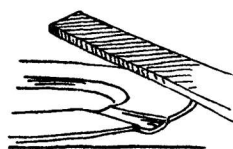
Turn the edge of the flute down



Flatten the bottom



Turn the edge of the flange up



True the edge with file and emery

Material— #22 gauge copper. Equipment— table block of wood dividers shears file emery chasing hammer rawhide or wooden mallet bench vise. Careful even planishing is necessary to the success of this problem. Oxidize.

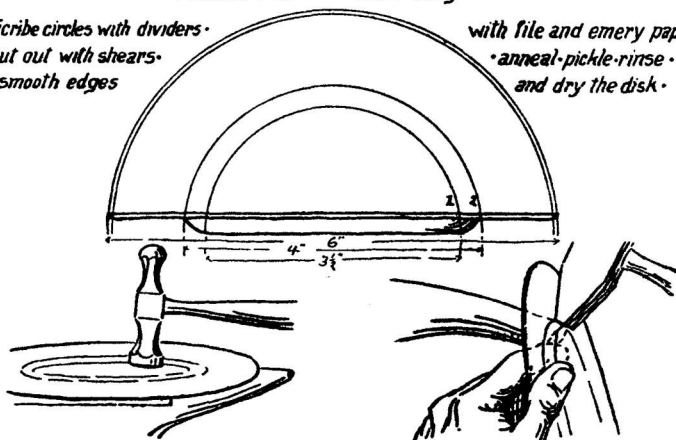
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## Problem # 8 Card Tray

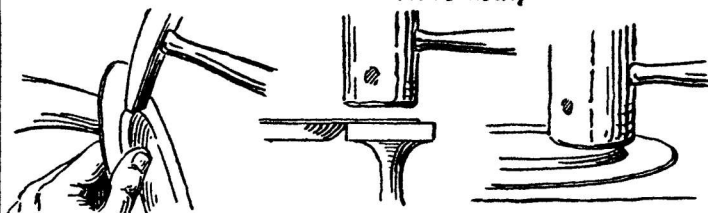
Scribe circles with dividers.  
cut out with shears.  
smooth edges

with file and emery paper  
• anneal • pickle • rinse •  
and dry the disk •



Planish to circle 1

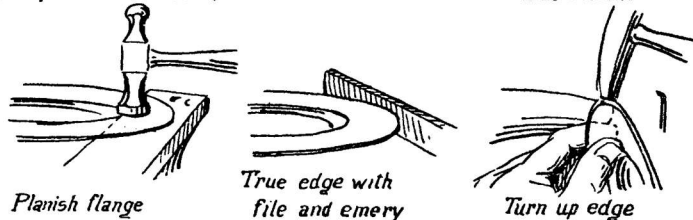
Raise between circles 1-2  
revolve slowly



Finish to correct shape  
then planish from 1 to 2

True flange

With light blows  
true bottom



Planish flange

True edge with  
file and emery

Turn up edge

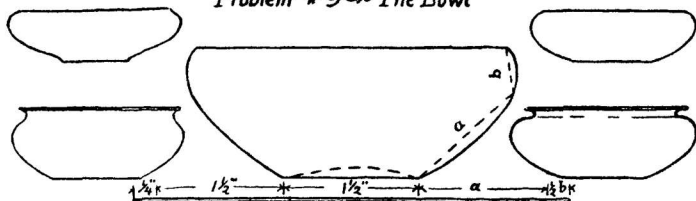
Material - #22 gauge copper. Equipment - dividers - shears - file - emery paper - planishing hammer - stake #1 - raising mallet - raising hammer - rawhide mallet - anvil - bench vise.

Note - misuse mallets - stakes - anvils - planishing and raising hammers. Polish when needed with emery and crocus paper. Good work demands well kept tools.

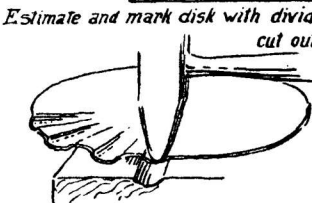
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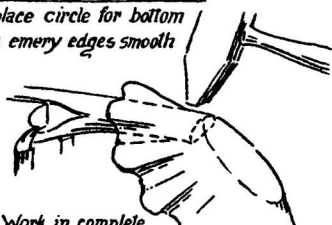
## Problem #9 The Bowl



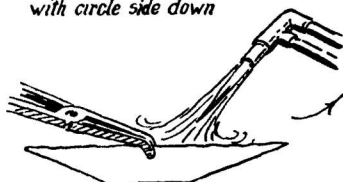
Estimate and mark disk with dividers, place circle for bottom  
cut out disk emery edges smooth



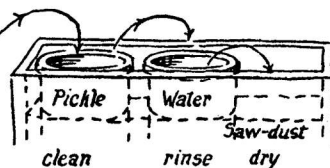
Anneal then flute from edge to about inner circle hold disk with circle side down



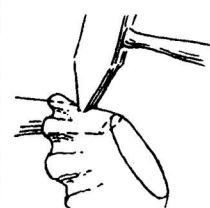
Work in complete concentric circles from bottom to edge in raising sides



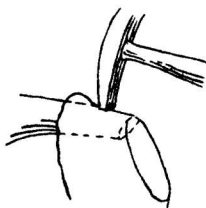
Anneal when indicated thus †



clean rinse dry



Flute then raise †



Raise with hammer † use mallet †

Dome slightly to facilitate planishing



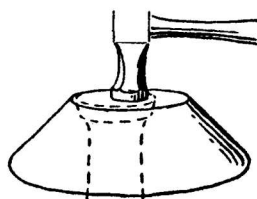
Material - #22 gauge copper. Equipment - dividers - shears - file - emery paper - fluting block - raising mallet - stake #1 - fire tongs - blow pipe - foot bellows - stone jars - sulphuric acid - water - saw dust - raising hammer - stake #2

Note - if in working a flute shows any signs of lapping stop anneal and open carefully with fingers and pliers anneal and proceed with the work.

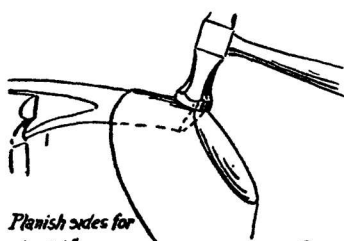
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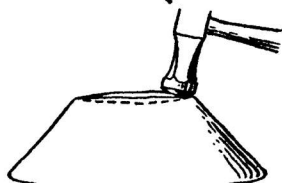
## Problem # 9 The Bowl continued



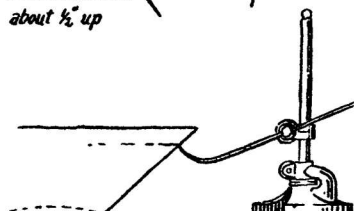
Planish the bottom-working in concentric circles from center to edge.



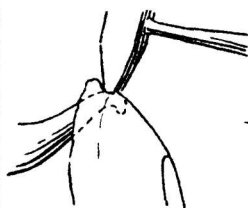
Planish sides for about  $\frac{1}{4}$ " up



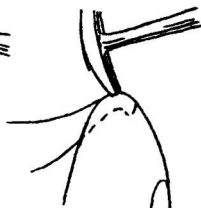
Lightly tap dome inward at edges-then work toward center untill dome is inverted.



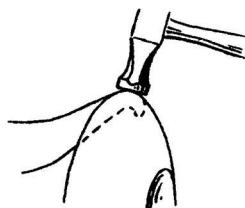
Mark a line at turning point and complete planishing of sides up to this line



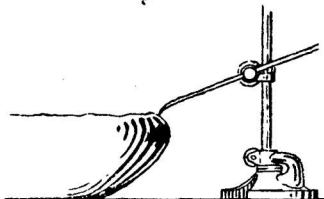
Raise curve as far as possible with raising mallet



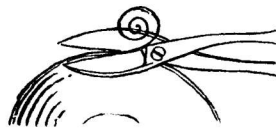
Complete the curve with raising hammer



Complete the planishing now out to the edge of bowl



Mark the height of the bowl



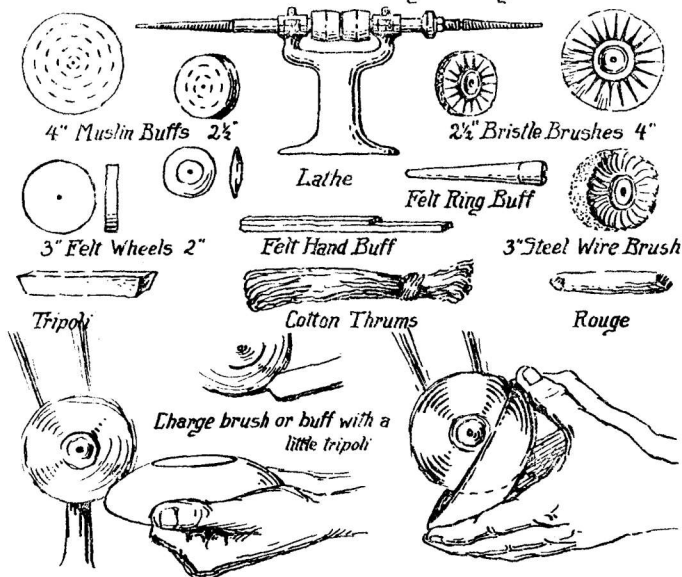
Trim file and emery the edge smooth

Note - that planish marks should touch each other and completely cover the surface. Keep blows of even weight. Use a slightly domed face hammer on flat surfaces and a flat face hammer on curved surfaces. The surface thus obtained is harmonious throughout.

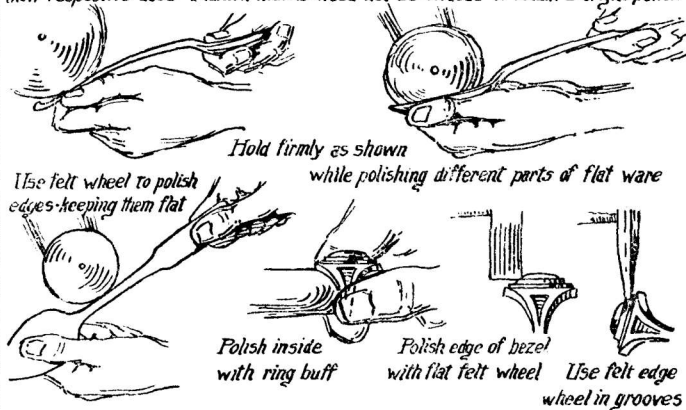
# ART METAL WORK AND JEWELRY

BY LOUIS J. HAAS

## Problem # 10 Polishing-Finishing



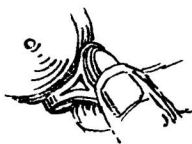
Pickle the piece-rinse-dry-and proceed thus. Polish inside and out with bristle brush and with buff charged with tripoli-wash clean in hot water with brush-soap-and ammonia-rinse-dry-finish with another brush and buff charged with rouge-wash-rinse-and dry. Reserve carefully tripoli and rouge brushes buffs and wheels for their respective uses. Planish marks need not be effaced to obtain a bright polish.



# ART METAL WORK AND JEWELRY

BY LOUIS J. HAAS

## Problem #10 Polishing-Finishing

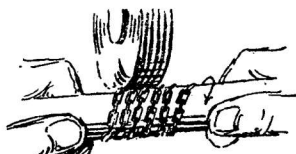


Polish sides on felt wheel.

Wash-rinse-dry-rouge with brush and buff and clean.



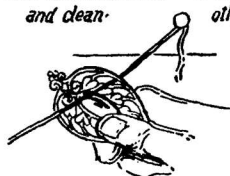
Use brush on face.



Tripoli chain on round stick with brush-unwind-rewind-and brush other side-wash-rinse-dry-rouge-and clean.



Hold firmly turning so that brush will reach every part. Wash-rinse-dry-rouge with brush and buff and clean.

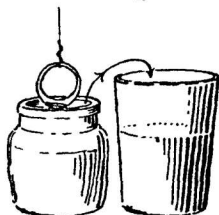


Polish openings with a thrum charged with abrasives. Wash-rinse-dry-rouge with brush and buff and clean.



Wash small jewelry thus.

## Oxidizing and Coloring

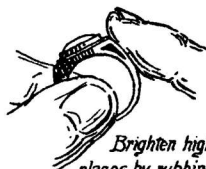


Dissolve in 20 parts of warm water 1 part of liver of sulphur. Immerse in this till oxidized rinse in water and dry.

After oxidizing scour with brush

pumice and water to lighten to any tone of gray desired.

Copper pieces are oxidized as above described.



Brighten high places by rubbing with finger charged with tripoli or with water and pumice. Wash-rinse-and dry on a soft cloth



Use the edge of face of steel wire wheel after polishing to get a bright matte surface. This may or may-not be oxidized.

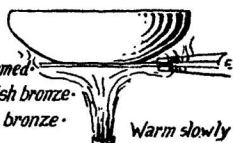
Scour with pumice and water after using wheel to get dull matte



Apply a coat of machine oil with waste to the surface of polished and cleaned piece.

The oil in burning off forms a lacquer which preserves the color

Highly polished copper turns the following colors under heat in the order named-yellow-gold-bronze-redish bronze-red-greenish bronze-bluish bronze.

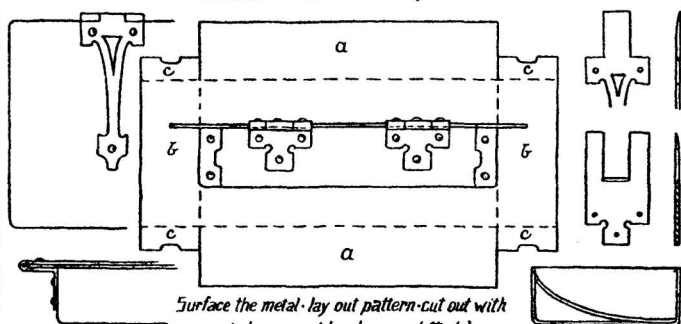


and evenly on a metal plate over a bunsen flame. Stop heat about one color before hue desired. - Cool slowly -

# ART METAL WORK AND JEWELRY

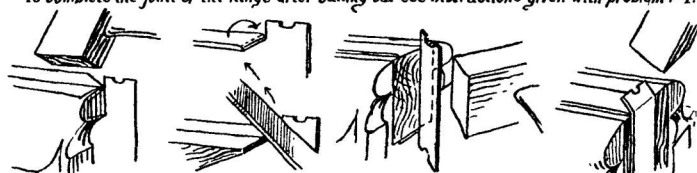
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## Problem #11 Stamp Box



Surface the metal - lay out pattern - cut out with saw and shears - and bend up on dotted lines.

To complete the joint of the hinge - after cutting out - see instructions given with problem #4.

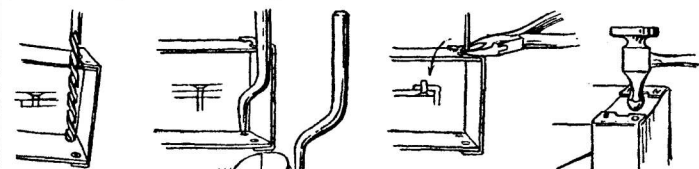


Bend a thus between protective vise jaws

Then file the edge indicated by → round

Bend b up over oblong block held in vise with aid of another

Bend c and drill for rivets



Inside with larger drill countersink to receive the heads of rivets

Hold rivet wire in vise and head flat into countersink with rivet punch

Cut rivet to length indicated with plier

Head up round

Shape the slide on



File upper edge of slide thus



fit into box - scrape



the parts to be joined - apply soft

to the joint - heat box just enough and feed

joint. Pickle - rinse - dry - polish - clean - and then drill and rivet hinges in place

soft solder stuck to

solder flux

Material - #22 gauge copper for box and slide - #18 gauge copper for lid - #22 gauge brass or silver for hinge - #20 gauge rivet wire. Equipment - shears - planishing hammer - anvil - square - tracer - saw frame - #0 saws - file - hand drill - drills - wooden blocks - vise - protective jaws - raising mallet - rivet punch - cutting plier - chasing hammer - bunsen burner - scraper - emery - soft solder and flux.

# ART METAL WORK AND JEWELRY

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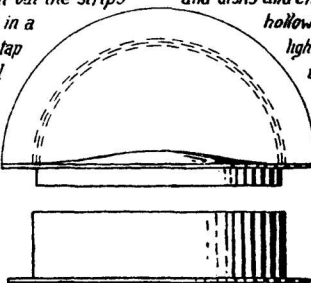
### Problem #12 Vanity Box

Surface the metal-cut out the strips  
Anneal the lid and dome in a  
place on stake #1 and tap  
true dome by effacing all  
with planishing hammer  
Lid and bottom are of

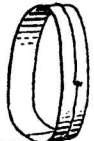
and disks and emery edges smooth-  
hollow in the lead block then  
lightly with rawhide mallet to  
uneven places Tap lightly  
to roll back the dome.  
#18 gauge copper. Strips  
6  $\frac{3}{8}$ " long and of #22  
gauge copper.



File ends of strips  
square-bend till they

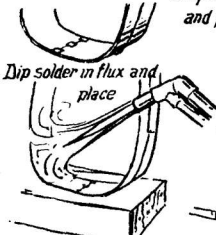


meet wire and then scrape  
surface for  $\frac{1}{8}$ " on either side of joint.

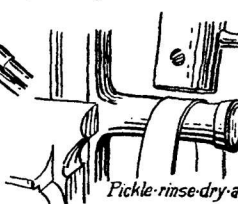


Make solution  
of equal part of powdered borax and water  
and paint the joint with the flux.

Cut thin solder thus  
into  $\frac{1}{8}$ " squares.



Dip solder in flux and  
place



Have bottom flat-scrape where side  
is to rest and then scribe circle to  
adjust to.

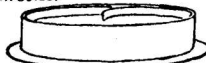


Evaporate moisture slowly then heat  
both sides till whole is hot enough to  
flush solder.

Pickle-rinse-dry and  
round over arm of  
stake #1 by tapping  
lightly with mallet.

Wire in place protect joint a. with  
a little ocher paste-place solder-  
flux-warm slowly-then flush the solder.

Heat the whole  
box evenly



Fit flange into box-cut  
and then file joint true.

Wire joint of flange  
with aid of a binder of  
sheet iron. Solder.

Remove traces of solder  
with scotch stone and  
water.

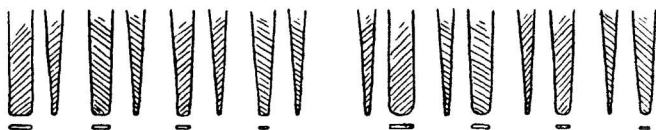


Material — #18 and #22 gauge copper-silver solder. Equipment — shears-anvil-  
planishing hammers-dividers-lead block-stake #1-file-square-binding wire-sheet iron-  
bottle-brush-borax-charcoal block-blow pipe-bellows-rawhide mallet-pliers-ocher-emery  
paper-scrapers-scotch stone. Note — ocher is mixed with water. Keep joint to be soldered  
clean and free from ocher. Pickle-rinse and dry the work after every annealing or soldering.

# ART METAL WORK AND JEWELRY

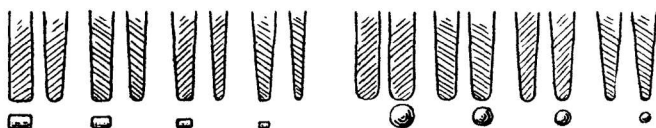
## BY LOUIS J. HAAS

### Problem #13 Chasing or Repoussé Tools



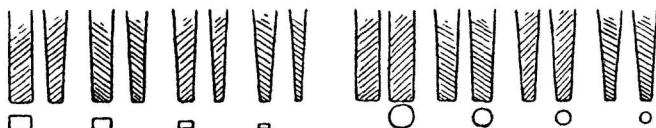
Flat liners

Curved liners



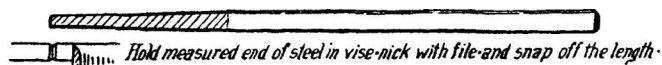
Oblong dappers

Circular dapper

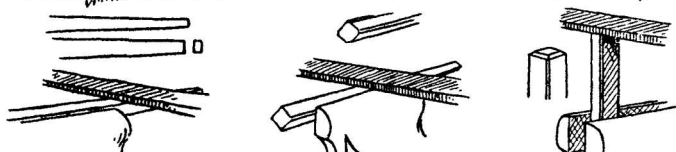


Oblong planishers

Circular planishers



Hold measured end of steel in vise-nick with file and snap off the length.

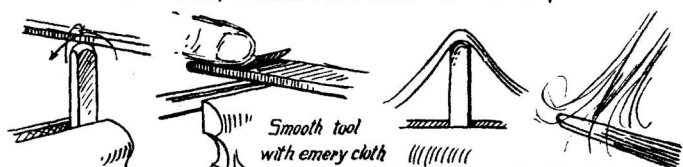


Taper to proper section

Break sharp edges thus

File head thus

Stamp the handle of all tools with owners mark



Motion of file should be that of curves to be constructed.

Smooth tool with emery cloth over a file.

Finish face thus with emery and crocus cloth and polish. Heat face end to a cherry color and immerse in cold water to temper steel.

Material —  $\frac{3}{16}$ " square soft tool steel.

Equipment — vise-files-emery and crocus cloth-blow pipe-foot bellows-fire tongs.

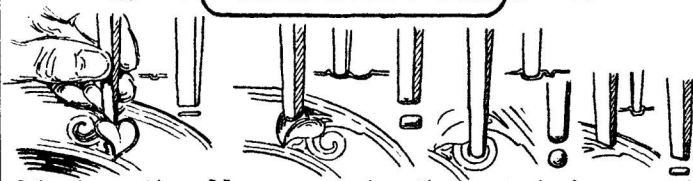
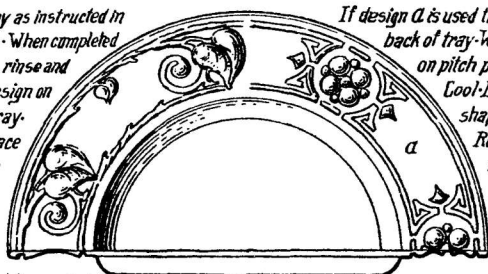
# ART METAL WORK AND JEWELRY

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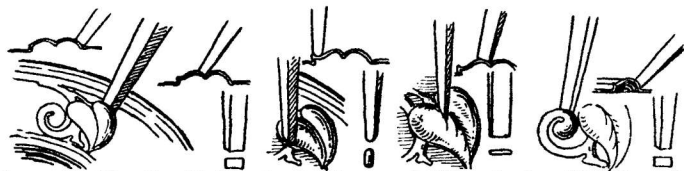
## Problem # 14 Tray with Repoussé Border

Construct tray as instructed in problem # 8. When completed anneal-pickle rinse and dry. Trace design on the face of tray. Warm and place on pitch pan

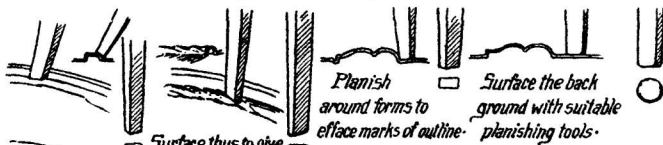
If design A is used trace it on the back of tray. Warm and place on pitch pan face down. Cool-Dap up the shapes with tools. Remove and reverse and planish background



Outline shapes with liner. Warm-remove-wipe clean with waste and replace face down on pitch. See problem # 19. Dap up the different shapes with tools to required elevations as suggested.



Remove-clean-fill cavities with pitch and replace face upward. Vein and surface Model the scrolls. Cool and then model leaves out of rough elevations as suggested. leaves thus. thus



Planish around forms to efface marks of outline. Surface the back ground with suitable planishing tools. Surface thus to give Round up the stems. stems a rustic effect. Warm-remove-wipe with waste-clean with kerosene and polish. In polishing take care not to efface the tool texture. Clean thoroughly and oxidize.

Material—# 22 gauge copper

Equipment— for making tray see problem # 8

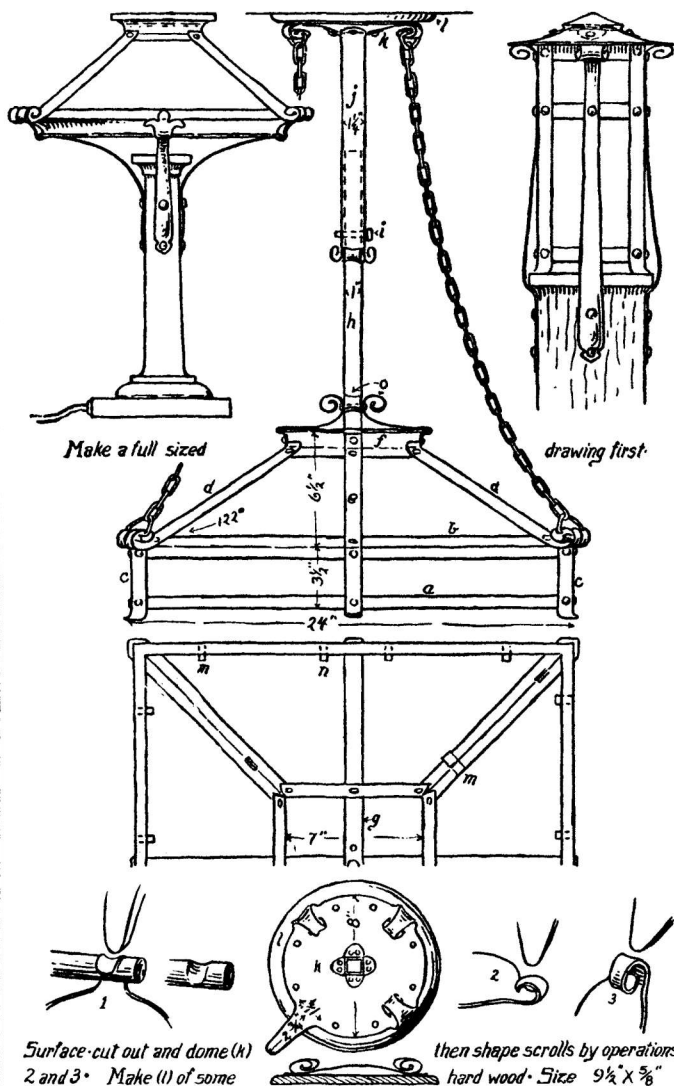
tracer-pitch pan and pitch-blow pipe-foot bellows-chasing tools-chasing hammer-crucible tongs-waste-kerosene

Note—that effect of tool may be that of continuous pressure-use quick springy blows. If piece works loose warm and press in place. If it sounds hollow remove-refill cavities and replace on pitch.

# ART METAL WORK AND JEWELRY

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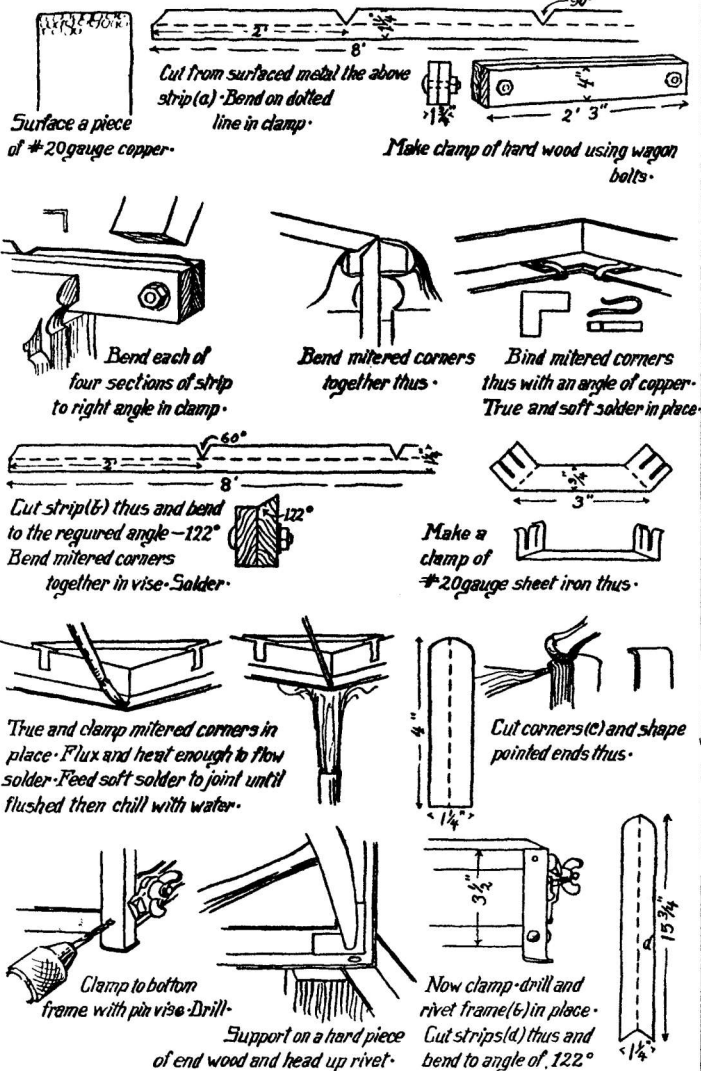
## Problem # 15 Art Lamps



# ART METAL WORK AND JEWELRY

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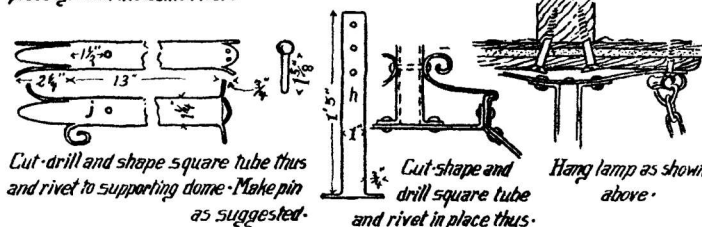
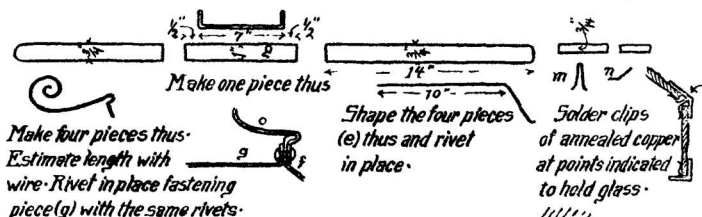
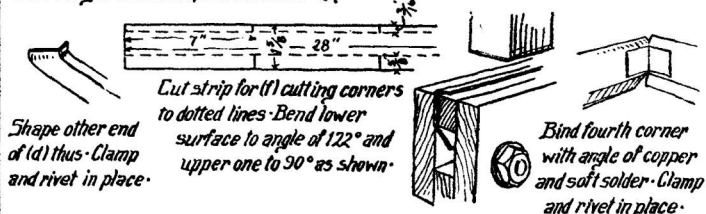
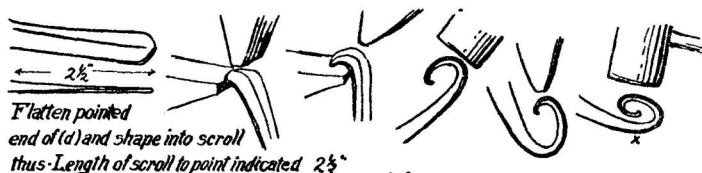
## Problem #15 Art Lamps continued



# ART METAL WORK AND JEWELRY

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### Problem #15 Art Lamps continued



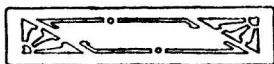
Material—copper square copper tube  $\frac{1}{8}$ " copper wire copper tack rivets hard wood wagon bolts screws chain sheet iron art glass. Parts (a b c e f) are made of #20 gauge (d g h j k o) of #18 gauge and (m n) of #22 gauge copper. Tubes should be of about #18 gauge metal. Equipment—anvil shears planishing hammer dividers tracer vise clamp files raising mallet raising hammer chasing hammer pin vise saw frame #0 saws center punch drills hand drill soft solder and flux small brush bunsen burner emery paper iron bar.

Note—in cutting card board patterns for glass allow plenty of clearance because of (1) thickness of glass. To finish oxidize or polish bright with a liquid polish.

# ART METAL WORK AND JEWELRY

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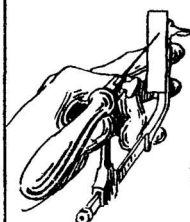
## Problem # 16 Bar Pin



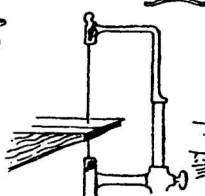
Surface silver to suit taste and in keeping with design. Trace on the design very carefully and then



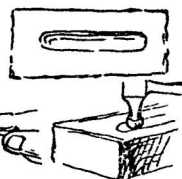
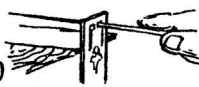
pierce with small drill. One pin might be made of copper for the practice. Saw right on the lines.



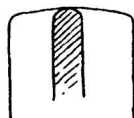
Spring saw frame between fingers while threading the saw.



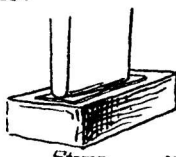
Saw right on the lines. True uneven places with the needle. Dont leave work for the files.



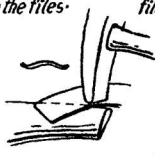
Hammer a suitable hollow in the lead block.



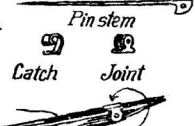
File this punch out of hard wood.



Stamp pin into shape on the lead block.



Roll the edges up slightly. Keep pin in shape. Now file the edges true.

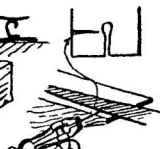


Pin stem Catch Joint Hold in tweezers and file backs bright and flat.

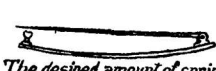
Hold in place with iron wire top of pin



Place joint and catch always in the positions shown.



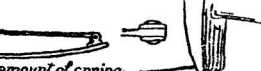
Cut to the proper length and repoint.



The desired amount of spring.



Stretch to increase spring.



Cut joint pin thus and head up the pin on both ends.

Material - #18 gauge silver - silver joint catch and pin stem - silver solder. Equipment - vise - shears - planishing hammer - anvil - tracer - drills - hand drill - #00 saws - saw frame - center punch - files - needle files - lead block - chasing hammer - wooden punch - stake #2 - raising hammer - tweezers - binding wire - borax - borax brush - scraper - burnisher - scotch stone - emery paper - blow pipe - foot bellows - charcoal block - pin vise - cutting pliers.

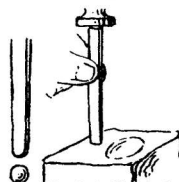
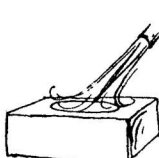
# ART METAL WORK AND JEWELRY

BY LOUIS J. HAAS

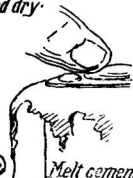
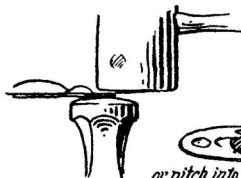
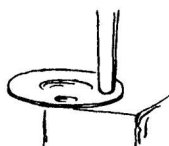
## Problem # 17 Embossed Brooch



Cut out the disk-anneal carefully and then trace the design in the same position on front and back

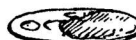


Dome in lead-Use paper True over hammer Heat until slightest tinge Strike hollow in lead between disk and lead head with mallet of pink appears-to anneal-If in a dark block corner color will be easily seen-While warm pickle rinse and dry.



Drap up large boss and then strike up smaller bosses in the hollow prepared with chasing tool and hammer

True the edge thus- warm cement block and press disk firmly in place- Cool-



Shape thus with barrett file Strike small marks down from face-Warm to remove and wipe clean with waste.



Carefully saw out design-Clean disk in alcohol

Scrape and burnish edges-Solder on the joint and catch-Pickle rinse dry and polish and then rivet pin in place-Finish polishing now.

Material-#20 gauge silver-silver joint catch and pin stem-silver solder.

Equipment-dividers-shears-blow pipe-foot bellows-charcoal block-tracer-planishing hammer-lead block-vise-rawhide mallet-hickory mallet-chasing tools-chasing hammer-pitch block-files-needle files-#00 saws-saw frame-scraper-burnisher-drills-hand drill-emery paper-scratch stone-raising hammer-pin vise-cutting pliers-center punch-Oxidize.

# ART METAL WORK AND JEWELRY

## BY LOUIS J. HAAS

### Problem # 18 Repoussé Brooch



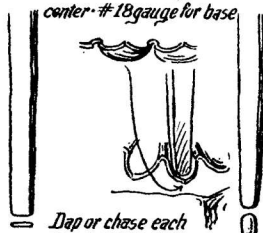
The flower can be made of either silver or copper. The center of the flower and the base is made of the contrasting metal. #22 gauge metal for flower and center. #18 gauge for base.



Cut out flower and dome



Place on cement face down. Strike up line to form each pipe with lining tool and chasing hammer. Remove and clean with waste and kerosene.



Drap or chase each petal on the lead block into the shape shown above allowing lips to curl upward.



Vein thus with lining tool



Round each petal up to an edge from the back.



Roll up the lips of the petals.



Surface deep cut out and dome center.



File to fit and fuse solder inside the edge. Pickle parts to be joined. Adjust. Flux.



Fit to base and fuse solder at points indicated. Adjust. Flux.



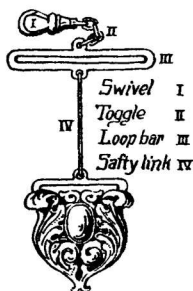
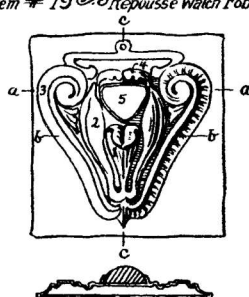
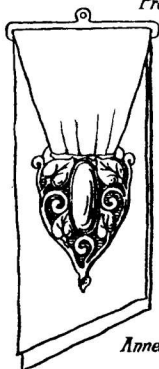
Adjust. Flux and flush solder. Pickle, rinse and dry. Protect joints with ocher and solder joint clean, pickle, rinse and dry and catch in place. Finish brooch as previously instructed.

Material - silver-copper-silver joint catch and pin stem-silver solder. Equipment - vise-shears-planishing hammer-anvil-tracer-drills-hand drill-#00-saws-saw frame-center punch-files-needle files-lead block chasing tools chasing hammer-wooden punch-raising hammer-tweezers-binding wire-borax-borax brush-scraper-burnisher scotch stone-emery paper-blow pipe-foot below charcoal block pin vise-cutting pliers. Oxidize to enhance contrasts.

# ART METAL WORK AND JEWELRY

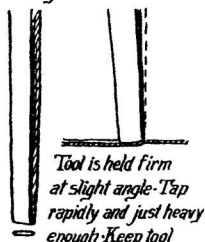
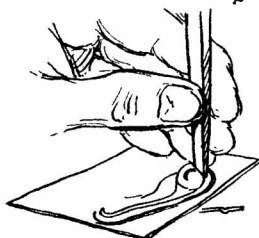
BY LOUIS J. HAAS

## Problem # 19 Repousse Watch Fob



Section at a a showing elevations

Anneal silver and then trace on the design carefully

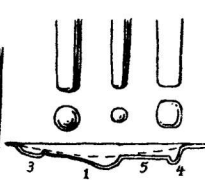


Tool is held firm at slight angle. Tap rapidly and just heavy enough. Keep tool

Dome in lead with paper between. Anneal. Fill with and place on pitch

Out line the design

continuously moving. Rotate between thumb and fingers in going around small curves.



Elevations required at section a a

Elevations required at section b b

Elevations required at section c c

Tap to the different elevations required as suggested above. Face downward in pitch and remove to anneal if necessary.

Heat remove and clean with waste while warm. Finish cleaning with waste and kerosene. Fill cavaties with pitch and place on the block face upward.

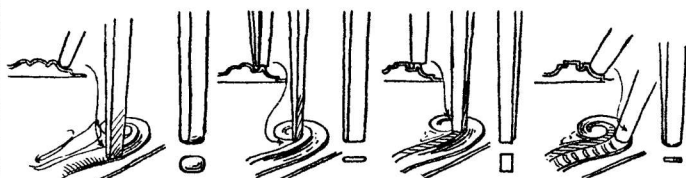


Material - # 18 gauge silver for loop bar - # 20 gauge silver for fob - # 24 gauge silver wire - silver chain - silver swivel - ribbon - silver solder - stone - Equipment - blow pipe - bellows

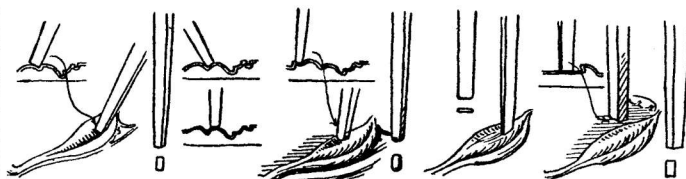
# ART METAL WORK AND JEWELRY

## BY LOUIS J. HAAS

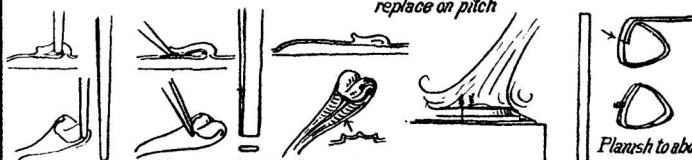
### Problem # 19 Repoussé Watch Fob continued



Chase rough elevation of scroll into shape until desired detail is obtained as suggested above



Construct leaf by chasing down into shape from the rough elevation as detailed above. If piece works loose warm and press in place. If it sounds hollow remove-refill cavities and replace on pitch.



Work out details of central leaf as shown above. Trim-fit on back and wire in place after removing fit to stone-cut from pitch and cleaning with alcohol. Place solder-flux-flush solder-pickle-wire and solder trim-file and burnish the edges.



Connect fob-loop bar-and toggle-and solder where indicated with a small flame. Open link of swivel with a twist of pliers connect toggle and close again. Keep heat from the fob.

Equipment—shears-saw frame-# 0 saws-lead block-planishing hammer-tracer-pitch block-chasing hammer-chasing tools-files-drills-hand drill-borax-borax brush-binding wire-pliers-tweezers-charcoal block. Note—in polishing care should be taken not to efface the tool texture. Oxidizing enhances the effect of the modeling and the texture

# ART METAL WORK AND JEWELRY

## BY LOUIS J. HAAS

### Problem # 20 Scarf Pin

*Lap up oval thus.*

*Make bezel of #20 gauge silver. Fit tight to stone. cut file joint wire and solder.*

*Stone must just slip through freely. Tap into perfect shape. Stretch with hammer if necessary.*

*File the edge thus.*

*File wire to a taper anneal and draw through successive holes of plate.*

*File to a tight fit wire. flux other first joint place solder and flush.*

*Do not anneal any during last six holes before wire is indicated leaving bearing for stone. #18 gauge so that it will be quite stiff. Cut off 2 3/4" for the pin. Anneal remaining wire and draw down to #28 or 30 gauge annealing at every 5th hole. Anneal evenly before twisting with the hand drill.*

*Scrape joints place carefully and solder.*

*File a groove in bezel to receive twist.*

*Point both ends of pin shape spur and solder in place with soft solder using little heat.*

*Flatten a piece of #18 gauge wire thus and shape over piece of same wire as shown in operations 1-2-3-4. Solder where indicated.*

*Efface all scratches with scotch stone. Cut to fit bezel. Burnish edges. tight and solder.*

*Set stone thus holding pin firm on cement block. Break cement to remove and clean in alcohol. Polish. Press on the polished twist with a slick.*

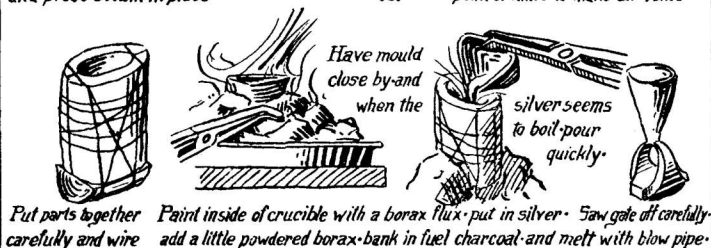
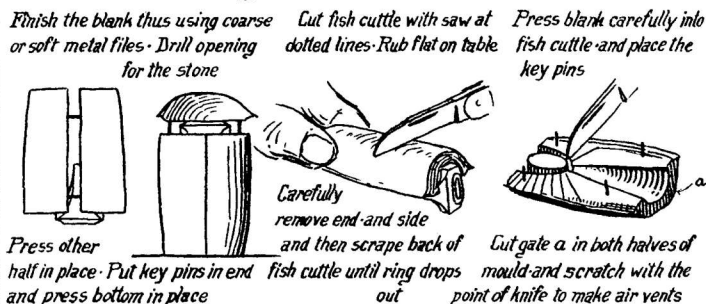
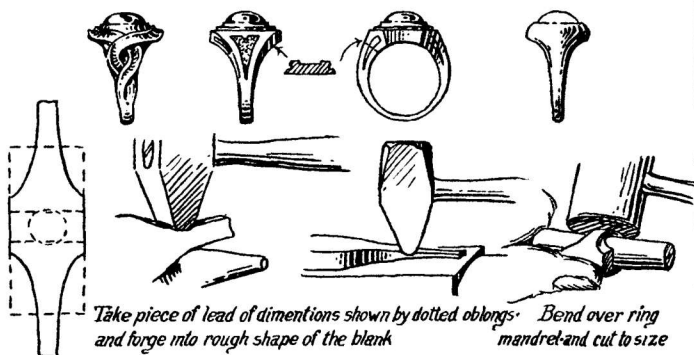
**Material**—stone. #20 gauge silver. #12 gauge silver wire. silver solder. **Material**

**Equipment**—shears dapping dies lead block pliers tweezers jewelers anvil files needle files binding wire borax borax brush #00 saws saw frame drills hand drill round draw plate draw tongs vise scotch stone cement block chasing hammer chasing tools planishing hammer burnisher scraper tracer pin vise blow pipe bellows. **Note**—by silver is meant sterling.

# ART METAL WORK AND JEWELRY

BY LOUIS J. HAAS

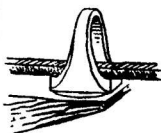
## Problem # 21 Casting a Ring



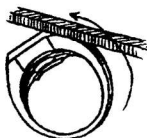
# ART METAL WORK AND JEWELRY

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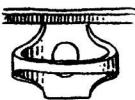
### Problem # 21 Casting a Ring continued



File to within one quarter of the size required



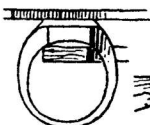
File with a circular motion to a true profile



File this surface true and square



File sides thus to the desired lines



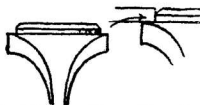
Level carefully.



Enlarge the tapered opening until it just receives stone. Scrape and burnish opening and emery paper or stone all surfaces smooth.



Start the moulding of bezel with a flat file thus.

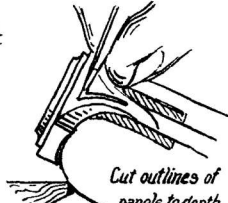
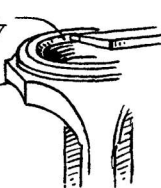


Complete thus with a round edged file.



Cut bearing for the stone with a small

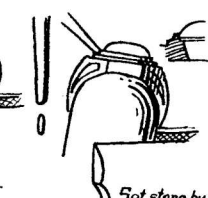
round faced graver. Hold graver so that it does not widen upper part of opening.



Cut outlines of panels to depth required.



With flat faced graver cut panel to depth suggested.



Handle of graver rests in palm under little finger. The thumb rests on the work guiding graver. Without removing thumb push graver forward with a movement of back part of hand. Sharpen on oil stone.

Set stone by chasing metal indicated up to it.

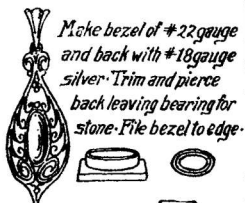
Material — stone-lead-silver. Equipment — anvil-forging-hammer-ranwide mallet-hickory mallet-ring mandrel-ring gauge-vise-shears-drills-hand drill-files-crucible-crucible tongs-borax-fuel charcoal-tracer-ring clamp-gravers-oil stone-scraper-burnisher-chasing tools-chasing hammer-emery paper-crocus paper-scotch stone-tin pan with sand and sheet of asbestos-blow Note — file scotch stone to shape required to stone difficult surfaces. pipe-fool bellows.

# ART METAL WORK AND JEWELRY

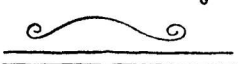
## BY LOUIS J. HAAS

### Problem # 22 Wire Pendant

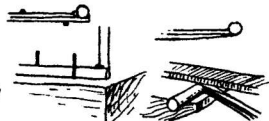
Draw down a quantity of sterling silver wire through the knife edge draw plate to about the following section.



Make bezel of #22 gauge and back with #18 gauge silver. Trim and pierce back leaving bearing for stone. File bezel to edge.



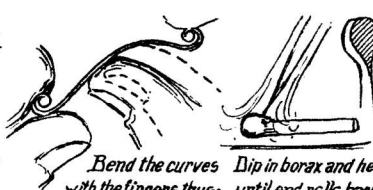
File a round groove across and half through the wire at each end.



Make a pattern of the scroll out of binding wire. Unwind and cut two pieces of silver knife edge wire this length.

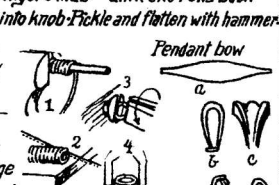
Stand a piece of #16 or #18 gauge round silver wire upright in charcoal block and solder into groove in ends of knife edge wire. thus.

Roll up volutes Close round wire of the scrolls and shape as shown thus. volutes with the flat nose pliers. true



Bend the curves with the fingers thus. Dip in borax and heat until end rolls back into knob. Pickle and flatten with hammer.

File into shape of leaf with barrel and needle files. Polish. Shape stem and cut to length.



Fit together on the charcoal with staples of binding wire. flux joints. place solder and flux. Pickle. rinse and dry. Solder solder joints. Place balls and ring in place using very small cut solder. Boil in pickle.

1. Wind #22 gauge wire on a mandrel. 2. Cut off links with saw thus. 3. Take twist out of links. 4. Close links with flat nose pliers. 5. Snap in place and solder. 6. File the soldered joint round. Pickle.

Material - stone. #12 gauge silver wire. #18 and 22 gauge silver. silver solder.

Equipment - sheers. files. draw plate. draw tongs. vise. blow pipe. foot bellows. binding wire. needle files. pliers. charcoal block. borax. borax brush. drills. hand drill. #00 saws. saw frame. scraper. burnisher. tweezers. stiff wire for mandrel.

# ART METAL WORK AND JEWELRY

BY LOUIS J. HAAS

## Problem # 2302A Modeled Ring A Waste Wax Process

Run a film of wax around ring gauge of size.

Make modeling of a piece of german silver wire.

Drop wax from heated stick onto gauge to build up ring blank.

Soften wax to receive stone with hot tool.

Coat stone thinly with vaseline and press in place.

Trim blank into shape with pen knife as shown # 1, 2, 3, 4.

Sear very slightly and carefully all surfaces with hot tool.

Model two flutes in face of central surface.

Model converging flutes in the side surfaces.

Immerse in warm water to soften and remove stone with back slightly.

Press edge of central surface with needle.

Warm where indicated with bunsen flame. When warm enough slip ring off gauge quickly.

Mix investment with water. Stir till smooth and of the consistency of thick cream.

Paint ring and blow into the crevices.

Attach wax gate to ring with hot tool.

Pierce with needle leaving a bearing for stone.

Trim lead to gate. Place over low heat till moisture and wax evaporates. Don't let wax boil. Increase heat just before investment hardens.

When wax gas burns out pour silver into hot mould.

Set on glass support. Pierce air vents in to wax. ring and fill with investment.

When silver has set water will remove investment. Pickle.

Material—stone, silver, inlay modeling wax.

File to size. Fit stone and set with care.

investment. Equipment—bunsen burner, ring gauge, modeling tool, pen knife, glass, needle, handled small bowl, spoon, brush, flask, small gas burner.

For additional equipment needed see problem # 21.

Note—gate should be cut off when filing is completed. With files and chasing tools offset all trace of it.

The author believes this method of making a one piece mould is original and unknown.



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